



The author operating FT8 from Kikilelwa camp, at 12,000 feet, on the slopes of Mt. Kilimanjaro in Tanzania. His daughter and climbing partner, Brandi, is in the background. (Photo courtesy of the author)

This new General's ambitious first Summits On The Air expedition didn't go as planned, but it hasn't dampened his enthusiasm to keep trying. His first SOTA effort? Mount Kilimanjaro!

The Snows of Kilimanjaro ... Ham Style

BY JOHN McELDOWNEY,* KG7LBY/5H2LBV

I started making plans to climb Mount Kilimanjaro¹ with my daughter early in 2017. Ham radio originally had not been part of the plan. I got my General license in 2016 but so far had just been sitting on it, not investing in equipment or learning more about ham radio. I really needed some kind of project to get me moving. One day a fellow ham told me about SOTA, Summits on the Air², after which I realized that taking ham equipment to the mountain, perhaps even making contacts from the summit, would be the perfect project to learn more about the HF operations now open to me as a General Class licensee.

An Exercise in Compromise

I quickly realized that this project would be an exercise in com-

promise. "How much power do I need?" I asked myself. "Well," I answered, "how many batteries do you want to carry up the mountain?" With propagation conditions as they are, what frequencies could I use, and how would that affect the antenna I chose? I decided that lower frequencies would be better, but that meant larger vertical or dipole antennas. How would I erect an antenna, anyway? There are no trees to toss wires into, and the winds at the summit would probably be ferocious. How much would a 40-meter antenna, plus loading coil, guys, anchors and a tuner, weigh? How much summit time would weather or impatient guides allow?

I started out with a Yaesu FT817ND mated to a second-hand MFJ-1621 tuner and began working SSB, mostly on 40 meters. I thought the MFJ-1621 would be too bulky to carry, even though it is light in weight. I kept investigating antennas. I decided to try a magnetic loop, settling on the PreciseLOOP SOTA-1 from Precise RF³. I thought it would give me the "sweet spot" between

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weight, good RF qualities on the bands I wanted, rapid set-up and tear-down, as well as physical robustness.

Deciding on Digital

I was disappointed with my early results on SSB and the low probability of success, considering propagation, available transmit power, and the fact that Africa is a rather "radio-dark" continent. I thought I would have to reach Europe or the Middle East to make any appreciable number of contacts. I decided to try FT8. After a few weeks of experimenting, and with the departure date fast approaching, I concluded that FT8 on 40 meters would give me the best chance of success. Using a digital mode, specified at one frequency, would mean the high Q-factor of the loop antenna would not be a problem as I would not be roaming up and down the band. Tuning the antenna at 40 meters was easy, as it requires a less delicate adjustment of the tuning dial at the low end of its operating range (the antenna covers 7-30 MHz).

This was my kit: Yaesu FT817ND, PreciseLOOP SOTA-1 magnetic loop antenna and tripod base, Signalink USB, and an Asus tablet computer without keyboard. The computer added about a pound but I figured it should have sufficient battery capacity to last the entire trip. The last item on my pre-trip list was getting a Tanzanian license ... more about that later.

Operating Plan

For acclimatization purposes, the approach to the summit base camp takes five days. My plan was to try to do some operating each evening in the lower-elevation camps to assess propagation, hone my set-up/take-down time, and hopefully contact someone nearby who would be willing to stand by on my summit day for a better chance at a QSO from the summit.

The first two evenings, at Simba Camp and Second Cave, I was unable to get on the air. Finally, at the third camp, Kikilelwa, at 12,000 feet, the weather was cooperative and my energy level was high enough to get on the air in the late afternoon.

The antenna set up quickly and, after a few problems with the computer, the FT8 signals started pouring in, from Indonesia, Kazakhstan, Spain, European Russia, and many others. Before too long, I had a QSO.

A String of Errors

Then I noticed something wrong, the first of many radio mistakes I made on this trip. I realized that before leaving my home, I forgot to re-configure WSJT-X to the Kilimanjaro maidenhead grid designator. I was dismayed when I saw my normal DN41 go out over the air. How would I find out what my coordinates were? I had no Internet (cell service is spotty on the mountain). I did not have a Maidenhead map. All I could do was try to recall an image of the map and do a little geographical estimating. I was partially right as I guessed KI46 when in fact Kilimanjaro is in KI86. I broadcast a free text message, "KILI MDNHD?", but at 13 characters, I guess no one got the meaning or no one got my signal. I decided I would try again the next night at Mawenzi Tarn Camp.

The next mistake I made was to not write down the QSO details at that moment. It was saved in the WSJT log, which I thought would be sufficient. More on that later. Soon the weather started to deteriorate. Our first three days were pleasant, but the next two were cold, wet, and windy. Mawenzi Tarn Camp sits at about 14,000 feet above sea level and has good northeastern exposure, but the sound of the rain and snow beating against the tent discouraged me from getting out and setting up the antenna.

Snow blanketed the next camp, Kibo Camp, at 15,000 feet. Usually, trekkers will rest here and then at midnight or so start for the summit with headlamps, aiming to ascend the last 4,000 feet and arrive at the Uhuru peak around sunrise. After an evening's rest, my daughter, Brandi, and I left for the summit with the antenna and radio in my pack, meaning I was carrying a little over 10 pounds more than anyone else in the group. Snow was falling and cloud cover hid the full moon.

After several hours of slowly trudging along in the deepening snow, I began to lose my resolve. The storm showed no sign of abating, and the prospects of being able to spend any time with the radio on the summit were dimming by the minute. I was getting cold, tired, and dispirited. My 63 years were weighing on me as much as the now-useless radio equipment I was carrying. Eventually, it just seemed pointless to continue. I decided to turn back about halfway to the crater rim. Brandi continued as far as Gilman's Point, on the crater rim, at over 18,000 feet.

Later, after Brandi's return, we packed up and descended to Horombo camp for our last night on the mountain. The weather was still miserable. As I lay in the sleeping bag resting from the long day, it occurred to me that the Quonset hut-style tent formed an arc above me that was about the same diameter as the PreciseLOOP antenna. I set it up inside the tent, without the tripod, and started monitoring 7 MHz while still lying snug in the sleeping bag. I don't know if it was because of my location on the south flank of the mountain, the propagation, or the fact the bottom of the antenna was sitting at ground level, but reception didn't seem as good and none of my FT8 transmissions was returned. With fading battery and spirits, I packed up the radio and antenna.

An Exchange With Local Hams (and One More Big Mistake)

Being able to operate on the air in Tanzania requires the acquisition of a Tanzanian ham radio license. This is a process that should begin many months before your planned arrival. Eventually, I established email contact with Mr. Hidan Ricco, 5H3HO, the deputy secretary of the Tanzania Amateur Radio Club and IARU contact person for Tanzania. He was instrumental in expediting my request and delivering my callsign just days before I left for Africa.

Hidan asked for help for TARC in the form of ham radio equipment, including a laptop for RTTY use. I didn't have an available laptop, but I agreed to leave him my tablet, the one that I was taking up the mountain. He took the time to travel from Dar es Salaam to Moshi so that we could meet and exchange the tablet. We agreed to meet on Sunday while we were awaiting our late evening flight. Once back in civilization in Moshi, I intended to wipe the tablet back to factory settings before giving it to Hidan. I transferred the WSJT-X wav files, which included my QSO and all other decoded traffic, onto my cloud account. The transfer did not complete, but I didn't realize it at the time. And I wiped the machine.

So, I did not make the summit; I have no record of my QSO, and I am sure that whoever was on the other side thinks that I was transmitting from KI46 rather than KI86 on the slope of the volcano. Not exactly a successful expedition.

On the other hand, the radio and antenna performed very well. They both survived six days of being stuffed in my pack, and the antenna does literally set up in less than five minutes. I was astounded at the flood of decoded FT8 message that arrived when I set up at 12,000 feet. As I recall, all the signals were from quite a distance away. I stopped sending CQs from Kikilelwa camp because I felt that transmitting incorrect grid info was the wrong thing to do, but in retrospect I should have just continued and resolved any problems later. Wiping the QSO information from the computer before verifying that I had a copy was careless. But I learned a lot from my mistakes and am not discouraged. I am back stateside now, in the Rocky Mountain west, and with summer approaching, I am looking forward to taking the antenna and FT-817ND to every mountaintop I can.

Notes:

1. Mount Kilimanjaro, in Tanzania, is the highest peak in Africa, rising to a height of 19,341 feet above sea level, according to Wikipedia.
2. For more information on the SOTA program, visit www.sota.org.uk.
3. www.preciserf.com